

Workgroup Consultation

GC0162: Changes to OC6 to amend the operational timings for the delivery of the additional demand reduction above 20%, with a focus between 20% and 40%

Overview: The modification aims through minor alterations to OC6 to amend the operational timings for the delivery of the additional Demand reduction above 20%.

Modification process & timetable



Have 5 minutes? Read our [Executive summary](#)

Have 20 minutes? Read the full [Workgroup Consultation](#)

Have 30 minutes? Read the full Workgroup Consultation and Annexes.

Status summary: The Workgroup are seeking your views on the work completed to date to form the final solutions to the issue raised.

This modification is expected to have a: High impact
Distribution Network Operators, Customers

Modification drivers: GB Compliance, System Security

Governance route Urgent modification proceeding under a timetable agreed by the Authority

Who can I talk to about the change?	Proposer: Usman Farooq, ESO usman.farooq@nationalgrideso.com m 07895310280	Code Administrator Chair: Lizzie Timmins elizabeth.timmins@nationalgrid.eso.com Phone: 07840708429

How do I respond? Send your response proforma to grid.code@nationalgrideso.com by **5pm on 18 September 2023**

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Executive summary

This modification proposes changes to Operating Code 6 (OC6) of the Grid Code to amend the operational timings for the delivery of Demand Disconnection above 20%, with a focus between 20% and 40%. The need for this Grid Code change has been identified by the Electricity Shortfall Prioritisation Review (ESPR) which is led by DESNZ. Raising this Grid Code modification received unanimous support from all the GB Distribution Network Operators' representatives on the ESPR group.

What is the issue?

OC6 is one of the tools which enables the Electricity System Operator (ESO) to reduce Demand on the National Electricity Transmission System (NETS) to either avoid or relieve operating problems. Currently, the operational timing required for Demand Disconnection between 20% and 40% means that Electricity Supply Emergency Code (ESEC) blocks cannot be used and thus critical sites cannot be protected even if technically possible.

What is the solution and when will it come into effect?

Proposer's solution:

The solution will amend wording within OC6 to change the operational timing requirements of Demand Disconnection between 20% and 40% of Demand.

Implementation date: By 15 December 2023.

What is the impact if this change is made?

This modification will have an impact on Distribution Network Operators and Customers. It will change DNO operational timings and allow the utilisation of the ESEC protected site list, for Demand Disconnection above 20%, with a focus between 20% and 40%, where technically possible.

Interactions

The Workgroup considered whether this modification would cause changes to be made to the Distribution Code. The Workgroup concluded that this modification would cause changes to be made to the Distribution Code, and a consultation pack will be developed to consider these changes.

This modification interacts with Grid Code modification [GC0161](#). GC0162 cannot be approved without [GC0161](#) being approved, as the proposed clauses in the [GC0161](#) legal text removing a barrier for protection of critical sites are required for the intent of GC0162 to be achieved.

What is the issue?

Operating Code 6 (OC6) is one of the tools which enables the Electricity System Operator (ESO) to reduce Demand on the National Electricity Transmission System to either avoid or relieve operating problems. It is designed to be used with no or at short notice.

There has been an increased focus on the tools the ESO has available to reduce Demand to ensure the GB Electricity System remains balanced in the event of an operational situation where there is a need to reduce National Demand.

In an event where Demand Disconnection is required, OC6 stipulates the operational timings to achieve this. If [GC0161](#) is approved, the first 20% of Demand to be disconnected will be able to be implemented utilising Electricity Supply Emergency Code (ESEC) blocks, which allow for critical sites to be protected, where technically possible. However, the existing operational timing requirement of the Grid Code for Demand Disconnection between 20% and 40% means that ESEC blocks cannot be used and thus critical sites cannot be protected.

The need for this Grid Code change has been identified by the Electricity Shortfall Prioritisation Review (ESPR) which is led by DESNZ. Raising this Grid Code modification received unanimous support from the GB Distribution Network Operators' representatives on the ESPR review group.

Why change?

The UK Government wants to align Grid Code Demand Control and ESEC products following the Electricity Shortfall Prioritisation Review (ESPR). To enable the ESO, during a supply shortfall, to instruct the Distribution Network Operators (DNOs) to utilise OC6 Demand Control in such a way that DNOs can provide protection of critical sites, where technically possible, when there is a requirement to reduce Demand between 20% and 40%.

What is the solution?

Proposer's solution

The solution will amend wording within OC6 of the Grid Code. This will allow changes to the operational timing requirements to implement Demand Disconnection between 20% and 40% of Demand. It also clarifies that all the 5% Demand blocks referred to in OC6 are actually Demand blocks between 4% and 6%, in line with operational practices. Some other changes to legal text are also proposed to clarify the implementation of the revised arrangements.

Workgroup considerations

The Workgroup has so far convened 4 times to discuss the issue, detail the scope of the proposed defect, devise potential solutions and assess the proposal in terms of the Applicable Code Objectives. The Workgroup are now seeking industry views as part of this Workgroup Consultation.

Consideration of the Proposal by the Grid Code Review Panel on 27 July 2023

The Grid Code Review Panel agreed to update the modification title to include 'with a focus between 20% and 40%'.

Consideration of the proposer's solution

The Original Proposal covered changes to OC6.5.5(c) only, altering the operational timings for Demand reduction between 20% and 40% so that ESEC blocks can be utilised where technically feasible. Following discussion within the Workgroup, it was agreed to make additional changes to OC6.1.5, OC6.5.3, OC6.5.4 and OC6.5.5. These changes were to ensure consistency within OC6, clarify what would occur in the case of multiple Demand Control instructions being issued by the ESO, and to ensure that OC6 is in line with operational practices. It was agreed that all references to "five per cent" should be changed to reflect the "between four and six per cent" reduction in Demand that would be expected to be delivered in practice due to the continual fluctuations in demand. Some other minor changes are proposed ensure clarity in other sections of OC6.

The Proposer asked for confirmation from all Distribution Network Operators (DNOs) that the new operational timings would be technically feasible. This was agreed by all DNOs, however it was noted that some DNOs could potentially disconnect multiple blocks in a shorter time than the 5 minutes proposed to be allowed for each additional, incremental 5% between 20% and 40%. At Workgroup 1, it was noted that not all DNOs were represented on the Workgroup and the remaining DNOs were encouraged to join.

One Workgroup member queried the 16:00 hours (day ahead) National Electricity Transmission System Warning referred to in OC6.5.4(c) and asked whether DNOs would be expected to reduce Demand if the ESO had not issued this warning in time. An ESO representative clarified that they would work with DNOs to implement as much Demand reduction as possible, however stated that DNOs would not be obliged to reduce Demand in this case.

Several Workgroup members queried whether DNOs would be at risk if they were to disconnect protected sites if not operationally feasible to protect them. The Workgroup agreed that the [GC0161](#) legal text had sufficient provision for this as it is clear that, for the purposes of OC6, site protection (in terms of ESEC) is not guaranteed.

The Workgroup discussed the possibility of a perverse result of OC6 Demand Disconnection causing Demand to increase rather than decrease, as a consequence of Embedded Generation on some distribution networks. Several Workgroup members thought this was a possibility, especially in the April to September period (compared to the October to March period). However, the ESO and DNOs stated that they would attempt, when setting up the operational switching arrangements, to avoid disconnecting Demand blocks with significant embedded generation by seeking, where possible, to ensure that the ESEC blocks that would be utilised to implement Demand Disconnection of between 20% and 40% had minimal levels of embedded generation.

The Workgroup also considered altering Terms of Reference (k) and (l) for this modification, to make it clear that the focus of this modification relates to operational timings, rather than the arrangements for designating critical sites (which falls under the governance of ESEC, rather than the Grid Code). The proposed changes to the Terms of Reference were approved at the Grid Code Review Panel on 24 August 2023.

When setting the scope for GC0162, the Grid Code Review Panel asked the Workgroup to consider any impacts on frequency response & reserve requirements and security of supply. The Workgroup analysed a number of scenarios under which Demand Disconnection of between 20 – 40 % under OC6.5.4 and OC6.5.5 could potentially occur. It was noted that the use of these areas of OC6 would be reliant on a National Electricity Transmission System Warning - High Risk of Demand Reduction notification issued by The Company by 16:00 hours the day prior and therefore should be considered as actions that can be planned rather than just initiated in real time. In directing Demand Disconnections under OC6.5.5, the ESO's Electricity National Control Centre would plan to enact the Demand reduction to minimise any disturbance on the National Electricity Transmission System. The increased switching times have potential to reduce the impact on the system of any disturbance resulting from reduction of Demand. It was therefore concluded by the Workgroup that the planned nature of the Demand Control instruction would not bear a material impact on security of electricity supplies to customers generally and that the current frequency response requirements would mitigate any adverse implications due to the increased switching time.

Several scenarios for the timing around a Demand Disconnection instruction being issued by the ESO to the DNO(s) were discussed by the Workgroup. As a result of these scenarios some members queried whether concurrent (rather than consecutive) instructions could potentially be given by the ESO. The Workgroup concluded that concurrent instructions could not be feasibly implemented by DNOs, and the ESO confirmed that they would aim to minimise the number of instructions, ideally with just one instruction being given.

Nevertheless, in the event that a second concurrent instruction was given by the ESO to a DNO, the ESO confirmed that this should be treated as a consecutive instruction by the DNO, and that the DNO should implement the first instruction before implementing the second instruction. It was discussed that if the DNO had completed the action for the first instruction ahead of the minimum time specified in OC6 then they would be free to start to implement the second instruction as soon as possible.

One Workgroup member queried whether there would be operational issues for the ESO if Demand Disconnection above 20%, where instructed, was completed much quicker than the 5 minutes allowed for each 5% (e.g. implementation of a further 15% (35% in total) of Demand Disconnection in say 6 minutes, rather than the 15 minutes proposed to be allowed). The ESO agreed to investigate this with their Control Room.

Impacts on other codes were also discussed by the Workgroup, and it was agreed that changes would need to be made to the Distribution Code as a result of GC0162.

The Workgroup discussed changes to the legal text in OC6.5.4(b) and it was highlighted that the clause 'measured at the time the Demand reduction is required' does not reflect current practice. It was proposed that all references to this requirement be removed throughout OC6 (five instances of this in three clauses: OC6.5.3, OC6.5.4 and OC6.5.5; all clauses that are currently being considered as part of this modification). It was also highlighted during the Workgroup that further work needs to be considered to unify methods undertaken by DNOs to establish the Demand blocks utilised for Demand Control events.

The Workgroup considered a potential scenario where the ESO gives a Demand Disconnection instruction under OC6 followed by a further instruction to either cancel that instruction or to restore the Demand (that had been disconnected). It was clarified by several DNOs that their systems were not capable of cancelling Demand Disconnection operations once they had been initiated and were underway. Several Workgroup members expressed an opinion that Demand restoration instructions are not within the scope of this modification, however Workgroup members asked for the legal text to be specific in considering only Demand Disconnection instructions (where multiple instructions are issued) and not cancellation instructions or Demand restoration instructions.

The Workgroup considered whether there were impacts on other areas of OC6. One Workgroup member queried whether OC6.6.3 would interact with the proposed new clause in OC6.5.5(d), however the Proposer discussed this with the ESO legal team and concluded that there was no interaction.

During previous information requests ahead of Winter 2022/23 from Ofgem and DESNZ, the ESO and DNOs acknowledged that using ESEC blocks could potentially overlap with LFDD stages. This could reduce the efficacy of LFDD however this risk currently exists if ESEC was to be initiated and has been recognised by industry, Ofgem and DESNZ. It has been recognised by the ESPR that future work is required to acknowledge the interactions between different Demand reduction tools including ESEC and LFDD.

Examples of OC6.5 Operational Timings

Below are a series of simple, illustrative, examples that the Workgroup used when examining what might (or might not) happen practically with the timings for instructions covered under GC0162.

Any numbers shown in square brackets refer to time elapsed since the initial instruction. Where 5% blocks are used, these refer to the Demand reduction blocks of between 4% and 6%, or voltage reduction stages. Where this is used for reducing Demand by up to 20%, integral multiples of these blocks or stages will be used.

Scenario 1 – Demand reduction of 20% under OC6.5.3

Time	Action	Demand Level at the Time
14:49	ESO issues single instruction to DNO	100%
14:51 [+2]	DNO must have commenced Demand reduction	100%
14:54 [+5]	DNO must have completed Demand reduction	80%

This scenario covers initial Demand reduction of 20% Demand, where the DNO has up to two minutes to initiate Demand reduction, and up to five minutes to complete it.

Scenario 2 – Demand reduction of 25%; 20% under OC6.5.3 and 5% under OC.6.5.5 – one single instruction

Time	Action	Demand Level at the Time
14:49	ESO issues single instruction to DNO to reduce Demand by 25%	100%
14:51 [+2]	DNO must have commenced Demand reduction	100%
14:54 [+5]	DNO must have completed Demand reduction to 80% and commenced the next 5% stage of Demand reduction	80%
14:59 [+5+5]	DNO must have completed Demand reduction to 75%	75%

This scenario covers an initial Demand reduction of 20% Demand, as in Scenario 1 above, followed by another 5% Demand Disconnection. The DNO has 5 minutes to complete the additional 5% Demand Disconnection, following completion of the first Demand reduction stage of 20%.

Scenario 3 – Demand reduction of 40% under OC6.5.3 and OC6.5.5 – one single instruction

Time	Action	Demand Level at the Time
14:49	ESO issues single instruction to DNO to reduce Demand by 40%	100%
14:51 [+2]	DNO must have commenced Demand reduction	100%
14:54 [+5]	DNO must have completed Demand reduction to 80% and commenced the next 5% stage of Demand reduction	80%
14:59 [+5+5]	DNO must have completed Demand reduction to 75%, and commenced the next 5% stage of Demand reduction	75%
15:04 [+5+5+5]	DNO must have completed Demand reduction to 70%, and commenced the next 5% stage of Demand reduction	70%
15:09 [5+5+5+5]	DNO must have completed Demand reduction to 65%, and commenced the next 5% stage of Demand reduction	65%
15:14 [5+5+5+5+5]	DNO must have completed Demand reduction to 60%	60%

As per Scenario 2 above, the DNO has 5 minutes to complete each additional 5% Demand Disconnection block over 20% (up to, in this example, 40%), following completion of the first Demand reduction stage of 20%.

Scenario 4 – Demand reduction of 25%; 20% under OC6.5.3 and 5% instructed subsequently under OC6.5.5 with a 3 minute period after completion of the first instruction before the second instruction is given

Time	Action	Demand Level at the Time
14:49	ESO issues first instruction to DNO to reduce Demand by 20%	100%
14:51 [+2]	DNO must have commenced 20% Demand reduction	100%
14:54 [+5]	DNO must have completed 20% Demand reduction to 80%	80%
14:57 [+5+3]	ESO issues second instruction to DNO to reduce Demand by a further 5%	80%
14:59 [+5 +3 +2]	DNO must have commenced the additional 5% Demand reduction	80%
15:02 [+5+3+5]	DNO must have completed Demand reduction to 75%	75%

This scenario covers where a second Demand Control instruction is given after completion of the first Demand reduction instruction, with the DNO given 5 minutes to complete the Demand reduction stages associated with the first instruction and a further 2 minutes to initiate (and 5 minutes to complete) the Demand disconnection required by the second instruction.

Scenario 5 – Demand reduction of 30%; 20% under OC6.5.3 and 5% under OC.6.5.5 issued as a single instruction – and 5% instructed subsequently under OC6.5.5 three minutes after the first instruction – two separate instructions.

Time	Action	Demand Level at the Time
14:49	ESO issues first instruction to DNO to reduce Demand by 25%	100%
14:51 [+2]	DNO must have commenced 20% Demand reduction	100%
14:52 [+3]	ESO issues second instruction to DNO to reduce Demand by a further 5%	100%
14:54 [+5]	DNO must have completed 20% Demand reduction to 80%	80%
14:54	Deemed time for receipt of ESO (second) instruction to DNO to reduce Demand by a further 5%	N/A
14:59 [+5+5]	DNO must have completed Demand reduction to 75%, and started next 5% stage	75%
15:04 [5+5+5]	DNO must have completed Demand reduction to 70%	70%

This scenario covers where a concurrent instruction is issued by the ESO (at 14:52). As in the scenarios above, the first instruction is completed (at 14:54), with the first 20% of Demand reduction initiated within 2 minutes (at 14:51) of that initial instruction being issued (at 14:49) and completed within 5 minutes (at 14:54), when a further two 5% blocks of Demand Disconnection is then initiated, each having an additional 5 minutes for each 5% block being disconnected. The second instruction is only initiated (at 14:54) by the DNO following completion of the first instruction (at 14:54) and the second instruction is then completed (at 15:04).

Draft legal text

The draft legal text for this change can be found in Annex 4.

The legal text for this modification is based on the assumption that [GC0161](#) will be approved by the Authority, and so GC0162 uses that as the baseline legal text; clauses from the [GC0161](#) legal text are required for implementation of GC0162.

Note that changes proposed as part of [GC0161](#) are in purple, and changes proposed as part of GC0162 are in green.

What is the impact of this change?

Proposer's assessment against Code Objectives

Proposer's assessment against Grid Code Objectives	
Relevant Objective	Identified impact
(a) To permit the development, maintenance, and operation of an efficient, coordinated, and economical system for the transmission of electricity	Positive Currently, the text doesn't allow, under certain circumstances, for the efficient operation of the electricity system.
(b) Facilitating effective competition in the generation and supply of electricity (and without limiting the foregoing, to facilitate the national electricity transmission system being made available to persons authorised to supply or generate electricity on terms which neither prevent nor restrict competition in the supply or generation of electricity);	Neutral The modification is related to Demand control in the event of there being a shortfall in active power to meet Demand. There is no implication to fair competition of assets.
(c) Subject to sub-paragraphs (i) and (ii), to promote the security and efficiency of the electricity generation, transmission and distribution systems in the national electricity transmission system operator area taken as a whole;	Positive OC6 Demand Control will provide better overall security to the system, protecting critical sites where technically feasible.
(d) To efficiently discharge the obligations imposed upon the licensee by this license and to comply with the Electricity	Positive This modification will enable DNOs to remain compliant

Regulation and any relevant legally binding decisions of the European Commission and/or the Agency; and	to Grid Code obligations in the event of a shortfall in active power.
(e) To promote efficiency in the implementation and administration of the Grid Code arrangements	Neutral This modification will not promote additional efficiency.

Proposer's assessment of the impact of the modification on the stakeholder / consumer benefit categories

Stakeholder / consumer benefit categories	Identified impact
Improved safety and reliability of the system	Positive It is aimed at efficiently managing scenarios where there has been a shortfall in active power to meet required Demand.
Lower bills than would otherwise be the case	Neutral This change will have no impact to customers' bills.
Benefits for society as a whole	Positive Certain critical sites could be protected when there is a Demand Disconnection requirement of between 20% and 40%.
Reduced environmental damage	Neutral This change will have no direct impact to environmental damage levels.
Improved quality of service	Positive GB Customers will be better off as Demand Disconnection between 20% and 40% will still allow for critical sites to be protected.

Standard Workgroup consultation question: Do you believe that GC0162 Original proposal better facilitates the Applicable Objectives?

When will this change take place?

Implementation date

10 Business Days from an Authority decision. This is to allow time to communicate the changes to the ESO and DNOs' control rooms once approved.

Date decision required by

01 December 2023

Implementation approach

It is envisaged that DNOs will need to make changes to their processes to allow Demand Disconnection of between 20% and 40% to utilise ESEC blocks.

Standard Workgroup consultation question: Do you support the implementation approach?

Interactions

- | | | | |
|---|---|--|---|
| <input checked="" type="checkbox"/> Grid Code | <input type="checkbox"/> BSC | <input type="checkbox"/> STC | <input type="checkbox"/> SQSS |
| <input type="checkbox"/> European Network Codes | <input type="checkbox"/> EBR Article 18 T&Cs ¹ | <input type="checkbox"/> Other modifications | <input checked="" type="checkbox"/> Other |

The Workgroup considered whether this modification would cause changes to be made to the Distribution Code. The Workgroup concluded that this modification would cause changes to be made to the Distribution Code, and a consultation pack will be developed to consider these changes.

This modification interacts with Grid Code modification [GC0161](#). GC0162 cannot be approved without [GC0161](#) being approved, as the proposed clauses in the [GC0161](#) legal text removing a barrier for protection of critical sites are required for the intent of GC0162 to be achieved.

How to respond

Standard Workgroup consultation questions

1. Do you believe that the Original Proposal better facilitates the Applicable Objectives?
2. Do you support the proposed implementation approach?
3. Do you have any other comments?
4. Do you wish to raise a Workgroup Consultation Alternative request for the Workgroup to consider?

Specific Workgroup consultation questions

5. Do you agree with the proposed changes to the wording in OC6 as set out in the legal text? Please explain your rationale.
6. Do you agree that the scenarios on pages 7-10 of the Workgroup Consultation correctly reflect the proposed legal text?
7. Do you believe any other sections of OC6 or any other sections of the Grid Code will be impacted by this modification?
8. Do you agree there are changes required to the Distribution Code DOC6 as a result of this modification? Please explain your rationale.

The Workgroup is seeking the views of Grid Code Users and other interested parties in relation to the issues noted in this document and specifically in response to the questions above.

Please send your response to grid.code@nationalgrideso.com using the response pro-forma which can be found on the [GC0162 modification page](#).

In accordance with Governance Rules if you wish to raise a Workgroup Consultation Alternative Request please fill in the form which you can find at the above link.

¹ If the modification has an impact on Article 18 T&Cs, it will need to follow the process set out in Article 18 of the Electricity Balancing Regulation (EBR – EU Regulation 2017/2195) – the main aspect of this is that the modification will need to be consulted on for 1 month in the Code Administrator Consultation phase. N.B. This will also satisfy the requirements of the NCER process.

If you wish to submit a confidential response, mark the relevant box on your consultation proforma. Confidential responses will be disclosed to the Authority in full but, unless agreed otherwise, will not be shared with the Panel, Workgroup or the industry and may therefore not influence the debate to the same extent as a non-confidential response.

Acronyms, key terms and reference material

Acronym / key term	Meaning
BSC	Balancing and Settlement Code
DESNZ	Department for Energy Security and Net Zero
DNOs	Distribution Network Operators
EBR	Electricity Balancing Regulation
ESEC	Electricity Supply Emergency Code
ESO	Electricity System Operator
ESPR	Electricity Shortfall Prioritisation Review.
GC	Grid Code
GCRP	Grid Code Review Panel
LFDD	Low Frequency Demand Disconnection
NETS	National Electricity Transmission System
OC6	Operating Code 6
STC	System Operator Transmission Owner Code
SQSS	Security and Quality of Supply Standards
T&Cs	Terms and Conditions

Reference material

- [Electricity Supply Emergency Code](#)

Annexes

Annex	Information
Annex 1	Proposal form
Annex 2	Urgency letters
Annex 3	Terms of reference
Annex 4	Draft legal text